Ab, the sound is cut short by the dumb letter, just as by putting a finger on the hand-bell after it has been struck.

With these two groups of letters only, many syllables and words can be made and read. The voice can be placed in the middle as Bab, and when they know Y is always short (except when there is no other voice, as in By) many other words can be made. The children will be eager to put them in every possible position; and to read them from the Reading book will be a further step in advance. In this way all the groups are taken. After that the double consonants and the regular words of the language, according to the principles gradually learnt in the Primer.[*] Sonnenschein's Reading Course is also taken before the more difficult lessons at the end. The lessons should be read, copied, and then dictated, for by this means spelling is easily learnt—all irregularities being grouped together.

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[*] "The Fröbel Primer, or Reading on Natural Principles," by A. C. Beale.

The Evening Sky—July 15 to August 15.

By Mrs. L. C. d'A. Lipscomb.

THE MOON.

New, July 17th; first quarter, July 25th; full, July 31st; last quarter, August 7th.

THE PLANETS.

Mercury, *Venus*, *Mars*, and *Saturn* are evening stars, and may be seen in the western sky at dusk.

Jupiter is easily distinguishable any fine evening this month in Capricornus, in the southern sky, its brilliancy far exceeding any of the fixed stars. This planet possesses so many attractive points of interest for us that it is difficult to mention them, much less describe them all, in the short space available. Its enormous size places it at the head of the planets, it being the largest member of the Solar System, excepting the Sun itself. It is 88,000 miles in diameter, or in other words, its surface is equal to that of 6000 Europes. Notwithstanding this great bulk, it revolves at a much quicker rate than the earth, performing a revolution in less than ten hours, so that any portion of the surface on the equator travels round at the rate of about 450 miles every minute.

Jupiter is attended by four moons, discovered by Galileo in 1610. He proved they were satellites by their motions and their different positions on successive nights. His contemporaries were so bigoted that they actually refused to look through the telescope, saying it was a Satanic instrument, and denying the existence of the satellites. Of one such unbeliever, Galileo piously hoped that if he would not believe in them or look at them in this life, he might after death enjoy a good view of them on his way to heaven! The smallest is about the size of our Moon, the other three are decidedly larger.

With the aid of only a small telescope the moons are visible, and assume four different positions. Firstly, a satellite shines like a small star; secondly, it is hidden behind Jupiter; thirdly, it is invisible to us on account of being in Jupiter's shadow, so that it receives no light from the Sun; and fourthly, it is between us and its primary, when it is generally lost to view, being a bright object against a bright background, but its shadow either follows or precedes it as a round black spot, producing a total solar eclipse all along its path across Jupiter.

Coming to the body of Jupiter itself, we find it very much flattened at the poles, but our attention is immediately attracted to its belts, and then to the spots on those belts. These phenomena are of great interest to astronomers, some of them being more stable than others, and any change is watched with the greatest interest. Without photographs or diagrams it is impossible to convey any idea of the belts and spots of Jupiter, most of which, or at any rate the most permanent of which, have well-known names. The Great Red Spot and the White Equatorial Spot are the two most famous of their kind. The former has a complete history for twelve years, and has been occasionally depicted for forty-seven years, which is remarkable when we consider its enormous size, it being 29,600 by 8300 miles in extent. We can only conjecture of what it is composed; it may be solidified matter, the nucleus of the first continent on Jupiter, or it may be a mass of smoke and erupted material from a huge volcano, or it may be an exceedingly hot part of the surface over which clouds cannot form, or it may be quite different to all these suggestions—we do not know. The White Equatorial Spot has been seen since 1878, but has not always been equally visible. It is now accompanied by several others of a similar nature.

These phenomena are all observable, but when we come to consider the physical condition of Jupiter and try to explain the causes of what we see, we find our task not an easy one. The Earth has grown cool enough to have a solid crust all over it, only broken at rare intervals by volcanoes, where the internal hot material occasionally finds egress. Jupiter, being so much larger, takes a much longer time to become sufficiently cold to solidify, therefore its surface is still in an incandescent state. It now represents what the Earth once was and what the Sun will be, and is midway between the solar and terrestrial stages of

cosmical existence. It is a planet whose store of internal heat is mainly efficient in producing interior agitations, betrayed by the changing features of its visible disk.

CONSTELLATIONS.

Cygnus.—A star in this group known as 61 Cygni was one of the first whose distance from the Earth was measured. Nothing seems to prove the immense power of the human mind so clearly as its ability to solve this problem—itself being so small. We have grown accustomed to think of the Sun's distance from us as being over ninety millions of miles, but how can we realise this multiplied more than 366,000 times? It is impossible. But some idea of the comparison of the distances may be obtained by recollecting that light reaches us from the Sun in *eight minutes*, while that from 61 Cygni takes nearly *six years* to traverse the space between us. We therefore see the star as it existed six years ago, not as at present.

Delphinus.—The two principal stars in this constellation have most curious names, viz., Svalocin and Rotanev. Learned men have searched the ancient languages and pored over black-letter versions of the Almagest and other old books in vain in their attempt to discover any words in any language of which these two might be corruptions. After so much trouble, the probable solution is absurdly easy. When the letters are reversed, the names are Nicolaus Venator, the Latin translation of Niccolo Cacciatore, who was an assistant at the Palermo Observatory, which issued a catalogue of stars containing these two names. Delphinus is a small constellation without bright stars or objects of interest to the naked eye.

Capricornus is easily distinguished at present, as it contains Jupiter, which at once attracts the eye by its great brilliancy. Its brightest star, if looked at closely with the naked eye, is seen to be double, that is, is composed of two stars very near together,

Vulpecula is a constellation little more than two centuries old, for it was first arranged by Hevel in 1672, when it contained a new star which was visible for two years and then disappeared, nor has it been identified since. This constellation contains a most wonderful nebula, known as the "Dumb-bell" Nebula, visible in a very small telescope. Several large instruments were said to have resolved it, *i.e.*, divided it into its component stars, but this is now proved to be erroneous by the spectroscope, which tells us it consists of gaseous nitrogen alone, and what were thought to be individual stars are but condensations of gas.

METEORS.

A Meteor shower of great importance takes place annually on or about August 10th, and may be looked for on the 9th and 11th also. These Meteors are called the Perseïds, as they appear to radiate from a point in Perseus, and are caused by a long stream of bodies following a comet in its orbit. In November, when there will again be a display, I hope to be able to give some account of these shooting stars.

A. LIPSCOMB.

Prizes.

FLOWER COMPETITION.—1. The first prize of a *Silver Pencil* has been gained by *Sis Amos*, aged ten, who sends the following ninety-five specimens, carefully pressed, and neatly and prettily mounted, but with one or two errors in classification:—Rubiaceæ, 2 species; Caprifoliaceæ, 1; Umbelliferæ, 4; Saxifragaceæ, 2; Rosaceæ, 5; Leguminosæ, 7; Sapindaceæ, 1; Tiliaceæ, 1; Geraniaceæ, 4; Caryophyllaceæ, 3; Violaceæ, 4; Cruciferæ, 10; Ranunculaceæ, 7; Papaveraceæ, 1; Gramineæ, 1; Cyperaceæ, 2; Juncaceæ, 1; Liliaceæ, 2; Amaryllidaceæ, 1; Orchidaceæ, 1; Salicineæ, 5; Urticaceæ, 1; Euphorbiaceæ, 1; Thymelaceæ, 1; Polygonaceæ, 1; Plantaginaceæ, 1; Labiatæ, 4; Scrophulariaceæ, 6; Boraginaceæ, 2; Apocynaceæ, 1; Oleaceæ, 1; Primulaceæ, 4; Compositæ, 5; Equisetaceæ, 1, &c. *Cherry* deserves honourable mention for very neatly arranged and carefully classified work.

2. The second prize of *Miss Anne Pratt's "Wild Flowers"* has been gained by *Stanley*, who sends fifty-one specimens, nicely mounted. *Canary, Birdie, Eiger, Matterhorn, Jung-frau* (who is six) deserve honourable mention for especially painstaking work. We wish there were prizes for all the little people who have sent in, but to know the names of the flowers and all about them is better than any prize. The owners may have their collections returned if they care to send stamps and address to the Editor, care of Messrs. W. H. Allen & Co.

Would *Sis Amos* send his address to the Editor?

DRAWING PRIZE.—Would Louard Alexander send his address to Mrs. F. Steinthal, Wharfemead, Ilkley? The "Shoes" must be drawn from *real* shoes. The drawings must be sent to Mrs. Steinthal before August 1st.

Parents' National Educational Union.*

The First Annual Meeting of the Parents' National Educational Union was held at London House on Tuesday, June 3rd, 1890, the Bishop of London kindly presiding.

After a few words of prayer, the Bishop of LONDON said: I suppose every one in the room knows the purpose of the Association which is holding its meeting here to-day quite as well as I do who am taking the chair. I do not profess to have studied the various means which may be used for promoting that purpose. The purpose appears to me one of very great importance indeed for the whole community, for the purpose of this Association is to improve generally the way of bringing up children. We are quite satisfied there is a great deal still to be learned on this subject. A great deal more might be done to prepare children for the life which they have to live afterwards, and that preparation ought to be begun from their very earliest years. We are satisfied that parents generally would be very much better able to discharge their important duties if they considered the subject a great deal more, or if they would make use of the experience of those who have already considered it. The fact is, children are very often brought up in a hap-hazard kind of way, and that elementary rule which St. Paul lays down when he bids "Fathers to provoke not their children," needs a great deal more inculcation than it has yet received. Parents are not fully aware how much mischief may be done in indulging in temper in the treatment of their children, nor of the need for a fuller knowledge of the characters of children. I have had a great deal to do with the education of boys going to college, and now that I am grown older, I have the education of my own little boys in the very earliest years. I cannot help feeling very often that it would be better for us if we knew a great deal more than we do about the way of forming in them the habit of obedience, and of teaching them to control their tempers and their impulses. The fact is that parents as a rule know nothing about it at all until they have it put upon them. Of course, it is quite true that by God's merciful providence the affection between children and parents is by nature so exceedingly strong that parents do succeed, if without very much instruction, in making their children feel that they are loved and love them in return. The object of this Society is to spread as widely as we possibly can a general knowledge of what is involved in the education of children; to incite parents generally to understand the matter for themselves, and to supply what those who have made a special study of

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* Our article on "Our Daughters" gives place this month to a report of the P.N.E.U. Annual Meeting.